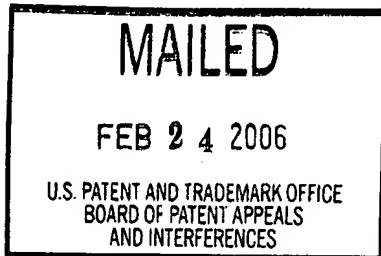


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte CHRISTIAN G. TONNA,  
HELMUT SCHRODER-BRUMLOOP,  
and CHRISTOPH DURAND



Appeal No. 2006-0259  
Application No. 09/220,462

ON BRIEF

Before GROSS, BAHR, and LEVY, Administrative Patent Judges.  
LEVY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 16-21, which are all of the claims pending in this application.

We AFFIRM.

BACKGROUND

The appellants' invention relates to an elevator door system including a drive motor coupled to an elevator car and disposed below the ceiling of the elevator car (specification, page 1).

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Claim 16 is representative of the invention, and is reproduced as follows:

16. An elevator door system comprising:  
an elevator car having a front face defining a door opening,  
at least one elevator door coupled to the front face of the elevator car for movement between an open position exposing the door opening and a closed position covering the door opening;  
a first sheave and second sheave disposed on the front face of the elevator car;  
a rope forming a closed loop about the first and second sheaves wherein the door is attached to the rope; and  
at least one flat drive motor integrated onto one of the sheaves such that the drive motor is drivingly coupled to the rope for moving the elevator door between the open and closed positions.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Aulanko et al. (Aulanko)	5,665,944	Sep. 9, 1997
Tracey	5,701,973	Dec. 30, 1997
Yoshikawa et al. (Yoshikawa)	JP -281888	Mar. 22, 1990
Yoshinobu et al. (Yosinobu)	JP -6329375	Nov. 29, 1994

Claims 16 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Aulanko.

Claims 16, 17 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshinobu in view of Aulanko.

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Claims 18-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshinobu in view of Aulanko and further in view of Tracey.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the answer (mailed November 19, 2003) for the examiner's complete reasoning in support of the rejections, and to the brief (filed August 18, 2003) for the appellants' arguments thereagainst.

Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered. See 37 CFR § 41.37(c)(1)(vii) (eff. Sept. 13, 2004).

#### OPINION

In reaching our decision in this appeal, we have carefully considered the subject matter on appeal, the rejections advanced by the examiner, and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, appellants' arguments set forth in the brief along with the

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examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

Upon consideration of the record before us, we make the determinations which follow. We begin with the rejection of claims 16 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Yoshikawa in view of Aulanko.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d

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1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole. See id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

The examiner's position (answer, page 4) is that although Yoshikawa discloses drive motor 9a, Yoshikawa does not disclose that the motor is integrated onto one of the sheaves 12. To overcome this deficiency of Yoshikawa, the examiner turns to Aulanko for a teaching of a flat motor integrated onto a sheave, as shown in figure 1. The examiner asserts that the modification would have been obvious in order to save space, to simplify the drive system, and to avoid the failure mode of having one of the drive belts fail.

Appellants' position (brief, page 4) is that there is no motivation to modify the references and (id.) that:

There is no suggestion by Aulanko et al or Yoshikawa that the drive system of Yoshikawa consisting of a motor located on the top of the car, a first drive belt and a intermediate drive gear can be replaced by the elevator drive motor of Aulanko et al. Assuming that Aulanko et al could be combined with Yoshikawa there is only a suggestion that the drive motor, located on top of the car, and intermediate gear could be replaced.

The examiner responds (answer, page 7) that "Aulanko et al contemplates in its discussion of the prior art a separate motor driving a drive sheave via a drive train (e.g., col. 1, lines 10-16). This represents the state of the art over which Aulanko et al wish to improve. Aulanko et al explicitly teaches that this configuration can be replaced by a flat motor integrated onto a sheave (col. 2, lines 42-46)." The examiner further asserts that Aulanko explicitly states the space savings as a motivation.

From our review of Yoshikawa, we find (page 2) that the motor 9a is located on fixed member 2, which is arranged on the upper edge of entrance 1 of the elevator. As shown in figure 1, motor 9a drives endless transmission rope 13 which is looped around rope pulleys 12 (page 4). Driving mechanism 9 includes, in addition to motor 9a and toothed belt 9d, large toothed-belt pulley 9c that is arranged coaxially with toothed-belt pulley 14

and rotates together with toothed-belt pulley 14. Thus, although Yoshikawa includes a motor-driven rope for opening and closing the elevator doors, Yoshikawa locates the motor 9a at the top of the frame member 2 which is connected to the front of the elevator.

Turning to Aulanko, we find that the reference (col. 1, lines 4-7) is directed to "elevator machinery comprising a motor, a traction sheave designed to move the elevator ropes, a bearing, a shaft, a stator provided with a winding, and a rotating disc-shaped rotor." It is disclosed (col. 2, lines 1-6) that:

The invention is characterized by elevator machinery comprising a motor provided with a frame plate, at least one bearing, a shaft, at least one stator with a winding and a rotating disc-shaped rotor with an air gap between them. The elevator machinery also has a tracking sheave provided with rope grooves and designed to move the elevator ropes.

As shown in figure 4, the motor (rotor 17, stator 14 and shaft 13) is integrated onto sheaves 18a, 18b, which hold ropes 2. It is further disclosed (col. 5, lines 5-10) that "[a]s compared with motors constructed according to previously known technology, the elevator machinery (and motor) of the invention is very flat. It can therefore be installed in many places in an elevator system where previously known motors are difficult, even impossible to install without an increased space requirement."

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Although Aulanko is directed to the hoisting motor of the elevator, and not to a door motor, we find from the above disclosure, a general suggestion that in elevator machinery, the motor used should be very flat, for use in places where previously known motors are difficult or impossible to install, without an increased space requirement. We observe from appellants' specification (page 1, lines 13-15) that the top of the elevator car is a place where space is at a premium. Accordingly, we find that Aulanko would have suggested to an artisan that the motor and pulley of Yoshikawa be replaced with a flat motor that can be installed without an increased space requirement, as taught by Aulanko.

In addition, from the disclosure of Aulanko (col. 2, lines 41-47 and) we find that:

The axial length of the motor of the invention is very small. The small axial length also means that the elevator machinery of the invention can be placed in various locations in the elevator shaft, e.g. in the place of a diverting pulley or in the bottom or top part of the shaft, without increasing the shaft dimensions from what they would be in any case.

In addition, from the disclosure of Aulanko (col. 4, lines 28-36) we find that:

The rotor 17 is mounted on the motor shaft 13 by means of a bearing 16. The rotor is a disc-shaped body placed substantially at the middle of the shaft 13 in the axial direction. The traction sheave 18 consists of



two ringlike halves 18a and 18b having the same diameter and provided with rope grooves 19. The halves 18a, 18b are placed on the rotor on opposite sides in the axial direction, between the windings 20 and the motor shaft.

From this disclosure, we find that the small axial length of the motor will save space and allow the motor to be integrated onto the sheaves, as in figure 4 of Aulanko. In sum, although Aulanko is directed to the motor for hoisting the elevator, the language of Aulanko suggesting general use of the small axial length motor in the elevator environment would have suggested to an artisan that the flat motor integrated into the sheave of Aulanko be used in Yoshikawa in place of Yoshikawa's motor and gear.

Accordingly, we are not persuaded by appellants' assertion (brief, page 4) that there is no suggestion by Aulanko or Yoshikawa of replacing the motor, intermediate gear and drive belt of Yoshikawa with the motor of Aulanko. Nor are we persuaded by appellants' assertion (id.) that "[a]ssuming that Aulanko et al could be combined with Yoshikawa there is only a suggestion that the drive motor, located on top of the car, and intermediate gear could be replaced." Upon replacing the motor and gear of Yoshikawa with the flat motor integrated onto the sheave, as taught by Aulanko, the drive belt would be

unnecessary, and would not be used, as the flat motor of Aulanko does not require a drive belt.

From all of the above, we find that the combined teachings of Yoshikawa and Aulanko would have suggested to an artisan the language of claim 16, and we are not persuaded by appellants of any error on the part of the examiner. The rejection of claim 16 under 35 U.S.C. § 103(a) is affirmed. As claim 21 has not been separately argued, the rejection of claim 21 under 35 U.S.C. § 103(a) is affirmed.

We turn next to the rejection of claims 16, 17 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Yoshinobu in view of Aulanko. The examiner's position (answer, page 5) is that Yoshinobu does not show a flat motor integrated onto a sheave. To overcome this deficiency of Yoshinobu, the examiner turns to Aulanko for a teaching of a flat motor integrated onto a sheave. The examiner asserts (id.) that "[i]t would have been obvious to one of ordinary skill in the art to modify the apparatus of Yoshinobu by replacing the pulley driven reduction system of Yoshinobu with the flat motor integrated onto a sheave as taught by Aulanko et al in order to save space and eliminate the failure mode to the pulley 15." Appellants present no arguments as to

this rejection. Although appellants (brief, page 5) list the statement of the rejection, the arguments that follow relate to a different rejection that was no longer relied upon by the examiner, and did not appear in the final rejection. In the answer (page 8), the examiner brought this to appellants' attention. Appellants could have chosen to file a reply brief to provide arguments relating to this rejection, but did not do so. Thus, we address the record as it stands.

From our review of Yoshinobu we find, as shown in a conventional elevator car door drive device (prior art figure 6), that motor 13 drives principal pulley 7 through the use of a drive belt (page 3). Yoshinobu discloses (page 2) that the objective of the invention is to reduce the number of structural members and the weight of the overall device, and to eliminate slippage of the drive belt. As disclosed on page 4, when the device of figure 6 is used for a long time, drive belt 15 slacks, and principal pulley 7 slips. In addition, maintenance is needed to keep the prescribed tension for drive belt 15. According to the invention, a linear motor 20, including a primary coil 23 and a reaction rod 25 (secondary conductor) is used. The reaction rod slides back and forth in the axial direction. At the end portions of the reaction rod 25 are the ends of closed loop

transmission rope 10. Yoshinobu further discloses (page 5) that as a result of the invention, it is possible to reduce the number of structural members, to simplify the assembly adjustment, and to decrease the weight of the overall device, as well as to prevent slippage due to slack of the drive belt. As shown in figure 2, linear motor 20 is installed horizontally on the car 1, where upper rope 10a is positioned (page 6).

From the disclosure of Yoshinobu, we find that Yoshinobu replaces the motor located on top of the car with a linear motor mounted in the rope area. Turning to Aulanko, we make reference to our findings, supra, as to the teachings and suggestions of the reference. We additionally find from our review of Aulanko (col. 1, lines 24-26) that a previously known technique was to use a linear motor as the hoisting motor. Aulanko discloses (col. 2, lines 29-32) that "[a]s compared to a linear motor, the motor of the invention, when used as an elevator motor, provides the advantage that it makes it unnecessary to build a rotor or stator extending over the whole length of the elevator shaft." As we stated, supra, although Aulanko is directed to the motor for hoisting the elevator, from the disclosure of Aulanko that "[a]s compared with motors constructed according to previously known technology, the elevator machinery (and motor) of the

invention is very flat. It can therefore be installed in many places in an elevator system where previously known motors are difficult, even impossible to install without an increased space requirement," we find that an artisan would have been taught to replace the linear motor, which includes a reaction bar that extends a significant distance across the front of the elevator car, with a flat motor integrated into the sheave as taught by Aulanko. From the lack of arguments with respect to this rejection, we are not convinced of any error on the part of the examiner. The rejection of claim 16 under 35 U.S.C. § 103(a) is affirmed. As claims 17 and 21 have not been separately argued, and fall with claim 16 (brief, page 3), the rejection of claims 17 and 21 under 35 U.S.C. § 103(a) is affirmed.

We turn next to the rejection of claims 18-20 under 35 U.S.C. § 103(a) as being unpatentable over Yoshinobu in view of Aulanko and further in view of Tracey. The examiner states (answer, pages 6 and 7) that Yoshinobu does not show a header to mount the drive components. To overcome this deficiency of Yoshinobu, the examiner turns to Tracey for a teaching of a header mounted between the top of the car and the top of the door opening (figures 1 and 2). Appellants assert (brief, page 6) that "Yoshinobu clearly shows a motor located on top of the car.

As discussed above there is no motivation to combine Aulanko et al and Yoshinobu therefore there is no motivation to combine Tracey and Yoshinobu because the drive of Yoshinobu must be located on top of the car." From our review of Tracey, we find that Tracey's disclosure of header 32 in figures 1 and 2 would have suggested to an artisan that the drive system of Yoshinobu be mounted to the elevator car by a header, as Yoshinobu is silent as to a header for securing the apparatus to the elevator car.

We are not persuaded by appellants' arguments because although the prior art figure 6 of Yoshinobu discloses a motor at the top of the elevator car, the invention of Yoshinobu replaces that motor and drive mechanism with a linear motor located in the rope region. From all of the above, we are not persuaded of any error on the part of the examiner. The rejection of claim 18 under 35 U.S.C. § 103(a) is affirmed. As claims 19 and 20 have not been separately argued, they fall with claim 18, from which they depend. The rejection of claims 19 and 20 under 35 U.S.C. § 103(a) is affirmed.


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## CONCLUSION

To summarize, the decision of the examiner to reject claims 16-21 under 35 U.S.C. § 103 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

  
JENNIFER D. BAHR  
Administrative Patent Judge

*Anita Pellman Gross*  
ANITA PELLMAN GROSS  
Administrative Patent Judge

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Appeal No. 2006-0259  
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